

### REMARKS

The above amendments to the above-captioned application along with the following remarks are being submitted as a full and complete response to the Office Action dated October 6, 2010 (U.S. Patent Office Paper No. 20100929). In view of the above amendments and the following remarks, the Examiner is respectfully requested to give due reconsideration to this application, to indicate the allowability of the claims, and to pass this case to issue.

#### Status of the Claims

As outlined above, claims 4, 6-8, 18-21, and 27-31 stand for consideration in this application, wherein claims 1, 3, 5, 9-12, 14, 15, 17, 22, 23, 25, and 26 are being canceled without prejudice or disclaimer, wherein claims 4, 6-8, and 18-21 are being amended to improve form, and wherein claims 27-31 are being newly added.

All amendments to the application are fully supported therein. For example, the amendments to the claims are supported by paragraphs [0066]-[0072] and [0078]-[0079] of the present application as originally filed, as well as by Figures 10, 11, and 13. Applicants hereby submit that no new matter is being introduced into the application through the submission of this response.

#### Formality Objection

Claims 3-8 were objected to under 37 C.F.R. §1.75(c) as being of improper dependent form. In particular, the Examiner noted that claim 3 was dependent upon itself and therefore failed to further limit the subject matter of a previous claim. Claims 3, 8, 10, 11, 15, 17, 21, 23, and 26 were variously objected to as lacking sufficient antecedent basis and/or other informalities. As set forth above, claims 3, 10, 11, 15, 17, 23, and 26 being canceled without prejudice or disclaimer, and claims 8 and 21 are being amended to improve form, thereby rendering moot and/or obviating the objections to the claims.

#### Prior Art Rejections

The Examiner rejected claims 1 and 10 under 35 U.S.C. §102(b) as being anticipated by Sukegawa (U.S. Patent No. 5,860,083). The Examiner rejected claims 3-5, 8, 11, 12, 23, and 26 under 35 U.S.C. §103(a) as being unpatentable over Sukegawa in view of Kon (U.S. Patent No. 6,249,838). The Examiner also rejected claims 9 and 14 under 35 U.S.C. §103(a) as being unpatentable over Sukegawa in view of Toshiba ("What is NAND Flash

Memory?”), claim 6 under 35 U.S.C. §103(a) as being unpatentable over Sukegawa in view of Kon, and in further view of Toshiba, claims 7 and 25 under 35 U.S.C. §103(a) as being unpatentable over Sukegawa in view of Kon, and in further view of Ishida (U.S. Patent Application Pub. No. 2002/0019700), claims 15 and 22 under 35 U.S.C. §103(a) as being unpatentable over Sukegawa in view of Coulson (U.S. Patent No. 6,785,767), claims 17, 18, and 21 under 35 U.S.C. §103(a) as being unpatentable over Sukegawa in view of Coulson, and in further view of Kon, claim 19 under 35 U.S.C. §103(a) as being unpatentable over Sukegawa in view of Coulson, and in further view of Kon and Toshiba, and claim 20 under 35 U.S.C. §103(a) as being unpatentable over Sukegawa in view of Coulson, and in further view of Kon and Ishida. Applicants have reviewed the above-noted rejections, and hereby respectfully traverse.

As outlined above, claims 4, 6-8, 18-21, and 27-31 remain of record. A proper obviousness rejection that relies on a combination of prior art elements requires establishing that the prior art references, when combined, teach or suggest all of the claim limitations. MPEP §2143. Furthermore, “[a]ll words in a claim must be considered in judging the patentability of that claim against the prior art.” *In re Wilson*, 424 F.2d 1382, 1385 (C.C.P.A. 1970). That is, to render a claim obvious under 35 U.S.C. §103, a determination must be made that the claimed invention “as a whole” would have been obvious to person of ordinary skill in the art when the invention was unknown and just before it was made. MPEP §2142.

Accordingly, Applicants respectfully submit that Sukegawa, either alone or in combination with Kon, Toshiba, Ishida, and/or Coulson, fails to teach, suggest, or disclose each and every limitation of claims 4, 6-8, 18-21, and 27-31. For example, none of the cited references teach or suggest “a first storage section formed of flash memories disposed in said casing” and “a second storage section formed of a hard disk drive disposed in said casing” where the first storage section is “configured to provide a first address space that is allocated with a lower portion of an address space allocated to the storage device as seen from said host” and the second storage section is “configured to provide a second address space that is allocated with an upper portion of the address space allocated to the storage device” as required by independent claim 27.

Rather, in contrast to claim 27, Sukegawa describes a data storage system having “flash memory unit 1 constituted by a flash EEPROM, a disk drive or an HDD (Hard Disk Drive) 2, and a controller” (col. 4, ll. 4-7) in which “[t]he data storage system and host system 4 of the present invention are components of a computer system such as a personal

computer, as shown in FIG. 2. In this computer system, the flash memory unit, HDD 2 and a floppy disk drive (FDD) 27 according to the present invention can be used as peripheral devices. Specifically, a PCI bus 20 is used as a local bus connected to the peripheral devices.” (Col. 4, ll. 31-39). Sukegawa further explains that “[i]n the computer system, **different drive numbers (#0, #1) are assigned to the HDD 2 and the flash memory drive 26 or flash memory card 25. The HDD 2 and flash memory unit 1 are treated as different drives in hardware by the OS or AP of the host system 4.**” (Col. 4, ll. 54-58) (emphasis added).

A hard disk drive and a flash memory unit that are peripheral devices of a personal computer, separately connected to a PCI bus with different assigned drive numbers, and treated as different drives, as described in Sukegawa, are clearly not first and second storage sections that are respectively formed of flash memories and a hard disk drive and both disposed in a casing, where the first storage section is “configured to provide a first address space that is allocated with a lower portion of an address space allocated to the storage device as seen from said host” and the second storage section is “configured to provide a second address space that is allocated with an upper portion of the address space allocated to the storage device” as required by claim 27.

Furthermore, Kon contrastingly describes a data storage system “for storing, and, as appropriate, updating or incrementing system or component information, such as remaining-expected-lifetime information, (or information from which remaining-expected-lifetime information can be determined or derived) (REL), in a fashion which remains associated with a data storage medium, and, in response, providing an appropriate output, warning or action. In various embodiments, the REL information may be stored using the same storage medium that is used for storing the data for which the data storage unit is intended (‘main storage medium’), e.g., in the header portion or other portion of the memory array of a flash memory, nonvolatile random access memory (RAM) or other RAM, a header portion of disk storage in a fixed or hard disk drive (HDD) and the like. Alternatively, **the REL information can be stored on a separate storage device such as providing an HDD storage unit with a small flash memory or other memory mounted on or otherwise coupled to the HDD unit.**” (Col. 2, ll. 12-30) (emphasis added).

More particularly, Kon explains that “[i]t is possible to store REL information both **in normal memory 114 and in a separate storage device 142**, either in duplicate form or in such fashion that the REL information in normal memory 114 is different from at least some

REL information stored in a separate storage device 142. When the REL information is stored in the normal memory 114, it may be stored in a header or other system area 138, in the non-header area 144 or in both areas (either in duplicate or distributive fashion). When a separate storage device 142 is provided, it may be used for storing only REL information or may be used for storing other information as well. As one example, a non-removable-medium hard disk drive may be provided with a **small flash memory 142, mounted in the hard disk drive chassis (142) and the separate memory storage device 142 can be used to store, in addition to REL information (or in place of REL information) information which is used for operating or accessing data stored on the disk**, such as so-called 'super block' information, file access table (FAT) information and the like, in duplicate, exclusive or distributed fashion." (Cols. 4-5, ll. 50-3) (emphasis added).

A hard disk drive in a hard disk drive chassis and a small flash memory unit mounted as a separate memory device in the hard disk drive chassis, where the small flash memory is used to store information pertaining to the operation of or access to the hard disk drive, as described in Sukegawa, are clearly not first and second storage sections that are respectively formed of flash memories and a hard disk drive and both disposed in a casing, where the first storage section is "configured to provide a first address space that is allocated with a lower portion of an address space allocated to the storage device as seen from said host" and the second storage section is "configured to provide a second address space that is allocated with an upper portion of the address space allocated to the storage device" as required by claim 27.

Likewise, each of the Toshiba, Ishida, and Coulson references fails to include any mention or suggestion of any first and second storage sections that are respectively formed of flash memories and a hard disk drive and both disposed in a casing, where the first storage section is "configured to provide a first address space that is allocated with a lower portion of an address space allocated to the storage device as seen from said host" and the second storage section is "configured to provide a second address space that is allocated with an upper portion of the address space allocated to the storage device" as required by claim 27. For this reason alone, claim 27 is patentable over the cited references.

As another example, none of the cited references teach or suggest that "upon booting of the host, said host reads the data of the system region for booting the operating system from said first address space in said first storage section formed of flash memories and executes the read data to boot the operating system on the host" where "the data of the system region [includes] **a master boot record, a file management table, and an operating**



system” as required by independent claim 27. Rather, Sukegawa contrastingly describes “a data storage system having a disk drive and a flash memory unit, wherein the storage area of the flash memory unit as well as a cache system is efficiently used, and cooperative functions of the flash memory and an HDD are achieved, whereby the data storage system can be efficiently used.” (Col. 2, ll. 36-41).

More particularly, Sukegawa describes embodiments in which “control information necessary for starting an application program (AP) and an OS, which are frequently used, is stored in the first storage area” (cols. 2-3, ll. 65-1) so that “the OS or AP can use, via the controller 3 or device driver 5, those storage areas in the flash drive 26 or flash memory card 25 of flash memory unit 1, which are other than the storage area used as the cache memory area relating to the present invention, as storage areas of an ordinary external storage device.” (Col. 4, ll. 58-63) (emphasis added).

With reference to Figure 4 of Sukegawa, which illustrates an embodiment of “a system having a mode (data storage mode) for storing the control information necessary for starting the OS in the permanent storage area 10A of flash memory unit 1” (col. 6, ll. 20-23), Sukegawa explains that “[a]ccording to this system, when the OS is automatically started by the control information read out from the HDD 2 at the time of turning-on of power, the control information is stored in the permanent storage area 10A used as the cache memory area for the HDD 2. Accordingly, when the OS is started at the time of the next turning-on of power, the control information necessary for starting the OS is read out not from the HDD 2 but from the permanent storage area 10A or cache memory area, and the read-out control information is transferred to the host system 4. Thus, the control information can be accessed from the permanent storage area 10A in the flash memory unit 1 having a higher access speed than the HDD 2.” (Col. 6, ll. 45-58) (emphasis added). Sukegawa further explains that when the control information is read out from the permanent storage area 10A, this reading out operation is performed by a cache system controller 3, which then transfers the read out information to the host system 4. (Col. 6, ll. 39-42). Then, “[b]ased on the control information, the host system 4 starts the OS. After the preparation for starting the OS is completed, the data storage utility program is stopped.” (Col. 6, ll. 42-44) (emphasis added).

A controller that reads out data for booting an operating system from a flash memory unit and transfers the data to a host system, where the data is control information for starting the operating system, and the host system then starts the operating system according to the

control information, as described in Sukegawa, is clearly not a host that reads data of a system region for booting an operating system from an address space in a flash memory storage section, where the data includes a master boot record, a file management table, and an operating system, and the host system then executes the read data to boot the operating system on the host, as required by claim 27.

Furthermore, Kon contrastingly describes that “a non-removable-medium hard disk drive may be provided with a small flash memory 142, mounted in the hard disk drive chassis (142) and the separate memory storage device 142 can be used to store, in addition to REL information (or in place of REL information) information which is used for operating or accessing data stored on the disk, such as so-called ‘super block’ information, file access table (FAT) information and the like, in duplicate, exclusive or distributed fashion. Preferably, in such embodiment, information stored in the separate storage device 142 can be used to recover or access information stored in normal memory 114, even after a head crash or similar problem has destroyed an on-disk super-block, FAT or similar information.” (Cols. 4-5, ll. 61-7) (emphasis added). Information that is read to recover or access information stored in a normal memory after a head crash or similar problem, as described in Kon, is clearly not data for booting an operating system that is read out by a host upon booting of the host and then executed to boot an operating system on the host, as required by claim 27.

In addition, Coulson simply provides that “[a] [m]emory 104 may store, among other things, code for an operating system (OS) 107, which, upon boot-up, may be loaded from a mass storage into memory 104 for execution by the processor 102.” (Col. 3, ll. 50-53). Coulson fails to include any mention or suggestion of any host reading data of a system region for booting an operating system from an address space in a flash memory storage section, where the data includes a master boot record, a file management table, and an operating system, and then executed the read data to boot the operating system on the host, as required by claim 27. Likewise, neither Toshiba nor Ishida includes any mention or suggestion of any host reading data of a system region for booting an operating system from an address space in a flash memory storage section, where the data includes a master boot record, a file management table, and an operating system, and then executed the read data to boot the operating system on the host, as required by claim 27.

Accordingly, none of the cited references teach or suggest that “upon booting of the host, said host reads the data of the system region for booting the operating system from said

first address space in said first storage section formed of flash memories and executes the read data to boot the operating system on the host” where “the data of the system region [includes] a master boot record, a file management table, and an operating system” as required by claim 27. For this reason alone, claim 27 is patentable over the cited references.

For at least these reasons, Applicants respectfully submit that Sukegawa, either alone or in combination with Kon, Toshiba, Ishida, and/or Coulson, fails to teach, disclose, or suggest each and every limitation of claim 27 and, therefore, that claim 27 is now in condition for allowance. For at least similar reasons to those discussed above with reference to claim 27, Applicants respectfully submit that Sukegawa, either alone or in combination with Kon, Toshiba, Ishida, and/or Coulson, fails to teach, disclose, or suggest any of the similar limitations required by independent claim 28 of “a first storage section formed of NAND flash memories disposed in said casing” and “a second storage section formed of a hard disk drive disposed in said casing” where the first storage section is “configured to provide a first address space that is allocated with a lower portion of an address space allocated to the storage device as a master drive” and the second storage section is “configured to provide a second address space that is allocated with an upper portion of the address space allocated to the storage device as a slave drive”; and that “upon booting of the host, said host reads the data of the system region for booting the operating system from said first storage unit formed of NAND flash memories and executes the read data to boot the operating system on the host” where “the data of the system region [includes] a master boot record, a file management table, and an operating system” and, therefore, that claim 28 is now in condition for allowance.

Moreover, for at least similar reasons to those discussed above with reference to claim 27, Applicants respectfully submit that Sukegawa, either alone or in combination with Kon, Toshiba, Ishida, and/or Coulson, fails to teach, disclose, or suggest any of the similar limitations required by independent claim 29 of “a first storage section formed of flash memories disposed in said casing” and “a second storage section formed of a hard disk drive disposed in said casing” where the first storage section is “configured to provide a first address space that is allocated with a lower portion of an address space allocated to the storage device as a master drive” and the second storage section is “configured to provide a second address space that is allocated with an upper portion of the address space allocated to the storage device as seen from said host, said second address space being arranged as a slave drive”; and that “upon booting of the computer system, said computer system reads, by way

of said ATA controller, data of the system region for booting the operating system from said first address space allocated to the first storage unit formed of flash memories and executes the read data to boot the operating system on the computer system” where “the data of the system region [includes] a master boot record, a file management table, and an operating system” and, therefore, that claim 29 is now in condition for allowance.

Further, for at least similar reasons to those discussed above with reference to claim 27, Applicants respectfully submit that Sukegawa, either alone or in combination with Kon, Toshiba, Ishida, and/or Coulson, fails to teach, disclose, or suggest any of the similar limitations required by independent claim 30 of “a first storage section formed of flash memories disposed in said casing” and “a second storage section formed of a hard disk drive disposed in said casing” where the first storage section is “configured to provide a first address space which is allocated with a lower portion of an address space allocated to the storage device” and the second storage section is “configured to provide a second address space which is allocated with an upper portion of the address space allocated to the storage device as a slave drive”; and that “upon booting of the host, said host reads, by way of said ATA controller, data of the system region for booting the operating system from said first storage unit formed of flash memories and executes the read data to boot the operating system on the host” where “the data of the system region [includes] a master boot record, a file management table, and an operating system.” In addition, Applicants respectfully submit that none of the cited references include any teaching or suggestion that “upon a sudden power-off being detected, said source power source monitoring circuit maintains a power source voltage for a predetermined time by using an electric charge accumulated in the condenser, and the control unit operates to store file management data temporarily retained at such sudden power-off into the first storage unit formed of flash memories under the power source voltage maintained by the electric charge accumulated in the condenser” as further required by claim 30 and, therefore, that claim 30 is now in condition for allowance..

In addition, for at least similar reasons to those discussed above with reference to claim 27, Applicants respectfully submit that Sukegawa, either alone or in combination with Kon, Toshiba, Ishida, and/or Coulson, fails to teach, disclose, or suggest any of the similar limitations required by independent claim 31 of “a first storage section formed of flash memories disposed in said casing” and “a second storage section formed of a hard disk drive disposed in said casing” where the first storage section is “configured to provide a first address space which is allocated with a lower portion of an address space allocated to the



storage device” and the second storage section is “configured to provide a second address space which is allocated with an upper portion of the address space allocated to the storage device”; and that “upon booting of the computer system, said host reads, by way of said ATA controller and said control unit, data of the system region for booting the operating system from said first address space allocated to the first storage unit formed of flash memories and executes the read data to boot the operating system on the host” where “the data of the system region [includes] a master boot record, a file management table, and an operating system” and, therefore, that claim 31 is now in condition for allowance.

Where an independent claim is nonobvious under 35 U.S.C. §103, then any claim depending therefrom is nonobvious. *In re Fine*, 5 U.P.S.Q.2d 1596, 1598 (Fed. Cir. 1988). Because claims 4 and 6-8 and claims 18-21 depend either directly or indirectly from claims 27 and 29 respectively, Applicants respectfully submit that Sukegawa, either alone or in combination with Kon, Toshiba, Ishida, and/or Coulson, does not render obvious claims 4 and 6-8 and claims 18-21 for at least the reasons set forth above that it does not render obvious claims 27 and 29 respectively and, therefore, that claims 4, 6-8, and 18-21 are also now in condition for allowance.

Therefore, Applicants respectfully submit that the present invention as claimed is distinguishable and thereby allowable over the prior art of record.

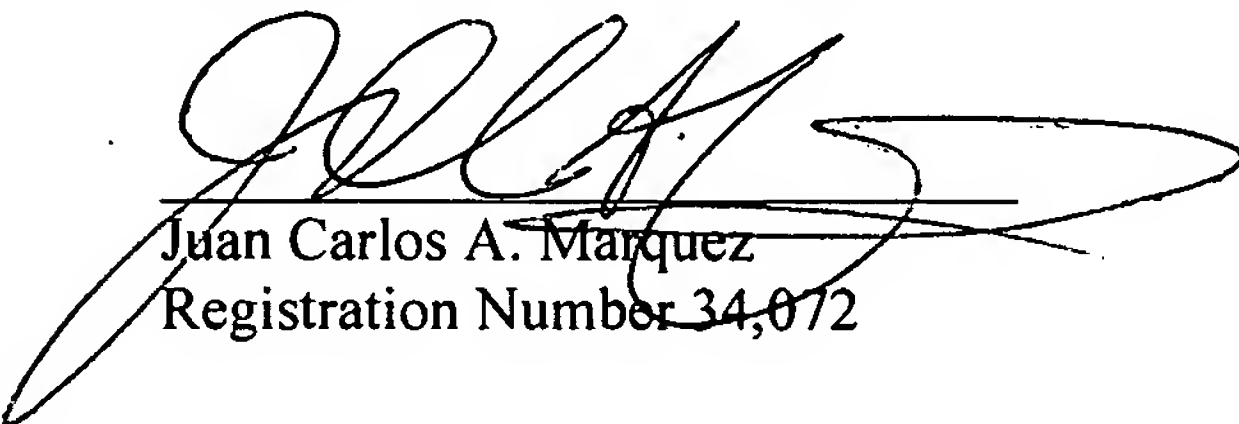
### Conclusion

In view of all the above, Applicants respectfully submit that certain clear and distinct differences as discussed exist between the present invention as now claimed and the prior art references upon which the rejections in the Office Action rely. These differences are more than sufficient to establish that the present invention as now claimed would not have been anticipated nor rendered obvious given the prior art. Rather, the present invention as a whole is distinguishable, and thereby allowable over the prior art.

Favorable reconsideration of this application as amended is respectfully solicited. Should there be any outstanding issues requiring discussion that would further the prosecution and allowance of the above-captioned application, the Examiner is invited to contact the Applicants' undersigned representative at the address and phone number indicated below.

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